REMARKS

I. Introduction

With the addition of claims 9 to 14, claims 1 and 9 to 14 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejection of Claim 1 Under 35 U.S.C. § 112

Claim 1 was rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Claim 1 has been amended so as to remove the objected to term "non-heated." Therefore, withdrawal of this rejection is respectfully requested.

III. Rejection of Claim 1 Under 35 U.S.C. § 103(b)

Claim 1 was previously rejected as being unpatentable under 35 U.S.C. §103(a) over U.S. Patent No 4,496,583 ("Yamamoto") in view of U.S. Patent No. 4,876,007 ("Naruo et al."), U.S. Patent No. 2,862,542 ("Norton"), U.S. Patent No. 4,589,983 ("Wydevan"), U.S. Patent No. 5,484,501 ("Jacobsen et al.") or U.S. Patent No. 3,679,515 ("Capell"), and U.S. Patent No. 5,298,097 ("Zanferrari") or U.S. Patent No. 3,695,985 ("Brock"). Applicant respectfully submits that the combination of Yamamoto, Naruo et al., Norton, Wydevan, Jacobsen et al. or Capell, and Zanferrari or Brock does not render obvious the present claims for the following reasons.

Applicant respectfully submits that the combination of Yamamoto, Naruo et al., Norton, Wydevan, Jacobsen et al. or Capell, and Zanferrari or Brock does not render obvious claim 1 for at least the reason that the combination of references fails to teach or suggest, either separately or in combination, all of the limitations recited in amended claim 1. For example, the combination of cited references does not disclose, or even suggest, forming spacers in a filter material during calendering via bonding of undrawn fibers in the filter material providing the filter material with a stable three-dimensional pleated shape, as required by amended claim 1. Support for this amendment may be found, for example, on p. 2, lines 1 to 3 and 10 to 15.

Yamamoto purportedly relates to a paper-like polyester fiber sheet and process for producing same. The fiber sheet is stated to include undrawn polyester staple fibers, which can be fuse-bonded to each other at temperatures of 110-200

Celsius. Col. 3, lines 9-21. Yamamoto states that the paper-like sheet may be calendered, embossed, or creped. Col. 5, lines 1-4.

Naruo et al. purportedly relate to a plate-type filter cartridge with an internal support. Norton purportedly relates to an apparatus and method for corrugating resin-impregnated sheet material. Wydevan purportedly relates to a fluid filtering device. Jacobsen et al. purportedly relate to a method of manufacturing an improved wood fiber mat for soil applications. Capell purportedly relates to a self-bonded tissue-fiber laminate process. Zanferrari purportedly relates to an apparatus and method for thermally bonding a textile web. Brock purportedly relates to high bulk laminates.

The Office Action recognizes that Norton does not disclose bonding with heated rolls but alleges that it would have been obvious to either heat the sheet or heat the rolls. But it is not clear why the Examiner believes it would have been obvious to heat either the rolls or the sheet at all if the Yamamoto sheet being provided for corrugation has, presumably, already been fuse-bonded. The Office Action seems to be preassuming that the fuse-bonding and corrugation are being done simultaneously (thus necessitating the heating of the calenders). However, none of the references cited disclose, or even suggest, such a sequence of manufacture steps. Further, and more generally, none of the references disclose, or even suggest, bonding undrawn fibers in a filter sheet so as to maintain a pleated three-dimensional filter shape.

While the pre-formed (pre-fused) planar paper of Yamamoto may arguably be provided it with pleats, such as those allegedly taught by Naruo et al., using the profiled rolls, allegedly taught by Norton, it would not have been obvious to pass the paper through profiled rolls and use the undrawn fibers in the paper, via bonding of the undrawn fibers, to assure that that filter material takes on a stable three-dimensional pleated shape. None of the references teach heating of profiled calender rolls for this purpose.

While the paper of Yamamoto may be heated or passed through heated calender rolls to bond the undrawn fibers during manufacture of the paper-like sheet, this step seemingly leaves it unnecessary to heat when applying the pleats. Rather than take stock paper, e.g., produced as taught by Yamamoto (and having already been passed through a standard calender for setting), and run it through a profiled calender to provide for pleats, it has proven beneficial to provide

the pleats during the actual production of the paper, i.e., to use only a single calender (one having a surface profile) and apply the pleats and set the undrawn fibers at the same time. Setting the undrawn fibers while applying the pleats allows the fibers to bond in the desired pleated configuration thereby provide for stability of the three-dimensional pleated structure. None of the references cited disclose, or even suggest, the benefit of combining the step involving setting the undrawn fibers, e.g., by heating, with the step of providing the pleats, e.g., by calendering using a profiled calender.

Norton teaches the use of a resin to increase the mechanical strength of a filter. However, there is no discussion of bonding undrawn fibers in the filter sheet so as to assure that the sheet material maintains its corrugation. Further, while the paper of Yamamoto may include fuse-bonded undrawn fibers, there is no discussion of bonding undrawn fibers in the sheet so as to assure that the sheet material maintains its corrugation after being passed through profiled rollers. Let alone do the cited references disclose, or even suggest, a particular profile for the calender, which even further enhances the stability of the pleated filter, as required by new claims 12 to 14.

In view of the foregoing, it is respectfully submitted that the combination of Yamamoto, Naruo et al., Norton, Wydevan, Jacobsen et al. or Capell, and Zanferrari or Brock does not disclose, or even suggest, all of the features of the present claims. As such, it is respectfully submitted that the combination of cited references does not render unpatentable the present claims. Accordingly, withdrawal of the present rejection is respectfully requested.

IV. New Claims 9 to 14

New claims 9 to 14 have been added herein. No new matter has been added. Claims 9 to 14 are patentable over the cited references for at least the reason that they do not (taken separately or in combination) disclose, or even suggest, during a calendering step, the undrawn fibers in a single fibrous web forming bonds between the profiled calender rolls and forming spacers in the non woven fabric providing the filter material with a stable three-dimensional pleated shape. Therefore, allowance of claims 9 to 14 is respectfully requested.

V. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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Richard M. Rosati
Reg. No. 31,792

KENYON & KENYON LLP
One Broadway
New York, New York 10004
(212) 425-7200
CUSTOMER NO. 26646